

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A polishing solution for metal, comprising an oxidizing agent, an oxidized-metal dissolving agent, a first protective-film forming agent, a second protective-film forming agent having properties different from the first protective-film forming agent, and water, wherein a combination of the first protective-film forming agent and the second protective-film forming agent controls etching rate, while maintaining chemical mechanical polishing rate, of said metal.

2. (original) The polishing solution for metal according to claim 1, wherein said first protective-film forming agent is at least one selected from a group of ammonia, amines, amino acids, imines, azoles, mercaptans and saccharides.

3. (original) The polishing solution for metal according to claim 2, wherein said first protective-film forming agent is at least one selected from among benzotriazole and a derivative thereof.

4. (original) The polishing solution for metal according to claim 1, wherein said first protective-film forming agent is a compound capable of forming a protective film by forming physical adsorption and/or chemical linkage on the metal film

surface.

5. (original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is compounds having an alcoholic or phenolic hydroxyl group, esters, ethers, polysaccharides, amino acid salts, polycarboxylic acids, polycarboxylates, vinyl polymers, amides, azo compounds and molybdenum compounds.

6. (original) The polishing solution for metal according to claim 5, wherein said second protective-film forming agent is at least one selected from a group of polyacrylic acids, polymethacrylic acids, polyamic acids, ammonium polyacrylates, ammonium polymethacrylates, ammonium polyamides and polyacrylamides.

7. (original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is a compound which assists the first protective-film forming agent in forming a protective film.

8. (original) The polishing solution for metal according to claim 1, wherein said oxidizing agent is at least one selected from a group of hydrogen peroxide, nitric acid, potassium periodate, hypochlorous acid and ozone water.

9. (original) The polishing solution for metal according to claim 1, wherein said oxidized-metal dissolving agent is at least one selected from a group of an organic acid, an ammonium salt of an organic acid, and sulfuric acid.

10. (original) The polishing solution for metal according to claim 9, wherein said oxidized-metal dissolving agent is at least one selected from a group of malic acid, tartaric acid, citric acid, ammonium malate, ammonium tartrate and ammonium citrate.

11.-15. (cancelled).

16. (currently amended) The polishing solution for metal according to claim 1, ~~11 or 15, which is adapted to be~~ used to polish a metal containing at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide.

17. (currently amended) The polishing solution for metal according to claim 1, ~~11 or 15, which~~ substantially does not contain any abrasive grains.

18. (original) The polishing solution for metal according to claim 1, wherein said second protective-film forming agent is a compound which enables the first protective-film forming agent to be added in a smaller quantity; the first protective-film forming agent being necessary for controlling etching rate to 10 nm/minute or lower.

19. (currently amended) A polishing method comprising polishing a metal film formed on the surface of a polishing object, in the polishing solution for metal according to claim 1, ~~11 or 15~~ to remove the metal film.

20. (original) The polishing method according to claim 19, wherein said metal film contains at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide.

21. (original) The polishing method according to claim 19, wherein;  
said polishing object has a multi-layer film having a metal layer containing at least any one of copper, a copper alloy, a copper oxide and a copper alloy oxide;  
said polishing method being a method of removing at least part of the metal film from the multi-layer film.

22. (original) The polishing method according to claim 19, wherein said polishing solution for metal substantially does not contain any abrasive grains.

23.-33. (cancelled)

34. (new) The polishing solution for metal according to claim 1, having a chemical mechanical polishing rate of said metal of at least 100 nm/minute and an etching rate of said metal of at most 10 nm/minute.

35. (new) The polishing solution for metal according to claim 34, wherein said etching rate of said metal is at most 1 nm/minute.

36. (new) The polishing solution for metal according to claim 34, wherein said

chemical mechanical polishing rate of said metal is at least 250 nm/minute.

37. (new) The polishing solution for metal according to claim 34, wherein said metal is selected from the group consisting of copper, a copper alloy, copper oxide and a copper alloy oxide.

38. (new) The polishing solution for metal according to claim 5, wherein said first protective-film forming agent is at least one selected from a group of ammonia, amines, amino acids, imines, azoles, mercaptans and saccharides.

39. (new) The polishing solution for metal according to claim 6, wherein said first protective-film forming agent is at least one selected from among benzotriazole and a derivative thereof.

40. (new) The polishing solution for metal according to claim 1, wherein the first protective-film forming agent is an agent which, in a comparison polishing solution together with the oxidizing agent, the oxidized –metal dissolving agent and water, and without the second protective-film forming agent, etches the metal at an etching rate of at most 10 nm/minute, and forms a sufficiently strong protective film on the metal so as substantially not to be removed therefrom; and the second protective-film forming agent is an agent such that said combination, in said polishing solution, controls the etching rate to an etching rate of at most 10 nm/minute while permitting said chemical mechanical polishing of the metal to be performed.

41. (new) The polishing solution for metal according to claim 1, wherein the first protective-film forming agent is an agent which, in a comparison polishing solution together with the oxidizing agent, the oxidized –metal dissolving agent and water, and without the second protective-film forming agent, etches the metal at an etching rate of at most 10 nm/minute, and forms a sufficiently strong protective film on the metal so as substantially not to be removed therefrom by a polishing pad; and the second protective-film forming agent is an agent such that said combination, in said polishing solution, controls the etching rate to an etching rate of at most 10 nm/minute while permitting said chemical mechanical polishing of the metal to be performed using a polishing pad.

42. (new) A polishing solution for metal, comprising:

a first protective-film forming agent which is a compound capable of forming a protective film by physically adsorbing the first protective-film forming agent on the metal film surface and/or chemically linking the first protective film forming agent with the metal film surface; and

a second protective-film forming agent which is a compound which assists the first protective-film forming agent in forming a protective film,

having a chemical mechanical polishing rate of the metal of at least 100 nm/minute and an etching rate of the metal of at most 10 nm/minute.

43. (new) The solution according to claim 42, consisting essentially of said first protective-film forming agent and said second protective-film forming agent.

44. (new) The polishing solution for metal according to claim 42, wherein said etching rate is 1 nm/minute or lower.

45. (new) The polishing solution for metal according to claim 42, wherein said chemical mechanical polishing rate is 250 nm/minute or higher.

46. (new) The polishing solution for metal according to claim 42, wherein said first protective-film forming agent is at least one selected from a group of ammonia, amines, amino acids, imines, azoles, mercaptans and saccharides.

47. (new) The polishing solution for metal according to claim 42, wherein said first protective-film forming agent is at least one selected from among benzotriazole and a derivative thereof.

48. (new) The polishing solution for metal according to claim 42, wherein said second protective-film forming agent is compounds having an alcoholic or phenolichydroxyl group, esters, ethers, polysaccharides, amino acid salts, polycarboxylic acids, polycarboxylates, vinyl polymers, amides, azo compounds and molybdenum compounds.

49. (new) The polishing solution for metal according to claim 42, wherein said second protective-film forming agent is at least one selected from a group of

polyacrylic acids, polymethacrylic acids, polyamic acids, ammonium polyacrylates, ammonium polymethacrylates, ammonium polyamides and polyacrylamides.

50. (new) The polishing solution for metal according to claim 42, wherein said metal contains at least one selected from the group consisting of copper, a copper alloy, a copper oxide and a copper alloy oxide.

51. (new) The polishing solution for metal according to claim 42, which substantially does not contain any abrasive grains.